Effect of pollution on greenhouse gas emission from aquatic ecosystems

Frederic Thalasso[1], Rodrigo González[1], Armando Sepúlveda[1], Karla Martinez[1], Katey Walter-Anthony[2]
1 Cinvestav, Department of Biotechnology, 07360 Mexico City
[2] University of Alaska Fairbanks. Water and Environment Research Center, 99775-5860 Fairbanks, Alaska

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Methane is an important anthropogenic greenhouse gas; contributing for about 30% to the total net anthropogenic radiative forcing of greenhouse gases. The global emission of atmospheric methane has been estimated from 500 to 600 Tg CH4 yr^{-1}. Previous studies have demonstrated that freshwater ecosystems, such as lakes, are important sources of CH4 being responsible for approximately 6 to 16% of global methane emissions. In lakes, organic carbon inputs are the major driving force leading to methane production and emissions. From a survey on methane cycling in lakes conducted in Mexico and in Alaska during several years, we will illustrate the impact of organic inputs on methane emissions with two examples (i) wastewater discharges to Mexican lakes and (ii) organic compounds release from thawing permafrost to boreal lakes.